Space Weather Forecast

Issued on Sunday 29 September 2024 at 01:26 Local

This forecast provides a four-day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales

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Space Weather Forecast Headline: Chance of Moderate-class flares.

Analysis of Space Weather Activity over past 24 hours

Solar Activity: Low with a only low common class flares observed. There are ten sunspot regions visible, with the most complex of these being a region near the southeast limb. This includes a small spot with opposite polarities within it (a "delta-spot") which can be a sign of increase instability and potential flare activity. However the region remains relatively small and ragged looking. There are also two regions in the southwest that have shown some small growth, however these are both relatively simple bipolar configurations. A further region, just east of the south-centre disc, is an unusual, consisting of a large number of spots of one magnetic polarity, but very few opposite polarity ones. This region also remains relatively inactive. Some weak growth was also observed elsewhere on the disc, including in a region in the northeast, and with the emergence of two very small new spots.

There were no Earth-directed CMEs (coronal mass ejections).

Solar Wind / Geomagnetic Activity: A very weak influence from a glancing CME was observed, alongside the background slow wind. Solar wind speeds were initially around 300km/s, but rose to vary 300-350km/s after 28/0710 UTC. due to the CME glance. Interplanetary Magnetic Field was initially weak, but rose to be briefly Moderate with the CME until 28/1130UTC, then became weak thereafter. The north-south component was initially Weakly positive (northward), but gradually rotated to become Moderately negative (southward) by 29/0839 UTC. The north-south component then became more variable, but stayed weak. Geomagnetic activity was Quiet to Unsettled (Kp 0-3).

Energetic Particles / Solar Radiation: The count rate of energetic particles remained at background levels with no solar radiation storms observed.

Four-Day Space Weather Forecast Summary

Solar Activity: Low to Moderate activity is expected, with a chance of further isolated Moderate class flares. There is a very slight chance of a Strong flare from AR3842.

Solar Wind / Geomagnetic Activity: There are no Earth directed CMEs. Background solar winds are expected until a possible weak enhancement occurs, from the faster solar winds from a coronal hole. Slightly elevated solar winds expected., most likely day 1-2 (29-30 Sep), before easing

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back to background slow wind conditions. Mainly Quiet (Kp 0-2) geomagnetic conditions are expected, but with a spell of Unsettled to Active (Kp 3-4) possible from any faster solar winds day 1-2 (29-30 Sep).

Energetic Particles / Solar Radiation: The count rate of energetic particles is forecast to persist at background levels, with no solar radiation storms occurring.

Geomagnetic Storms

Geomagnetic Storm / Probability (Exceedance)	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Minor or Moderate	G1 to G2	No	5	5	1	5
Strong	G3	No	1	1	1	1
Severe	G4	No	1	1	1	1
Extreme	G5	No	1	1	1	1

Radio Blackouts - X-Ray Flares

X-Ray Flares / Probability	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	R1-R2 (M Class)	No	50	50	50	50
Very Active	R3-R5 (X Class)	No	10	10	10	10

Solar Radiation Storms (High Energy Protons)

Radiation Storms / Probability (Exceedance)	Level ($cm^{-2}sr^{-1}s^{-1}$)	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	≥ S1	No	5	5	5	5
Very Active	≥ S3 *	No	1	1	1	1
* S3 ≥ 10 MeV ≥ 1000 pfu and/or 50 MeV ≥ 10pfu. (pfu = $cm^{-2}sr^{-1}s^{-1}$)						

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